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IS 2216 (1985): Tennis Balls [PCD 22: Sports Goods]

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Indian Standard

(Reaffirmed 2002)

SPECIFICATION FOR TENNIS BALLS

(First Revision)

Sports Goods Sectional Committee, CPDC 4; Tennis Balls and Table Tennis Balls Subcommittee, CPDC 4 : 11 [Ref : Doc : CPDC 4 (1788)]

1. Scope — Covers requirements for tennis balls.

2. Dimensions — The balls shall be of diameter 63·5 to 66·7 mm and mass 56·7 to 58·5 g.

3. Requirements — The balls shall have a uniform outer surface and shall be white or yellow in colour. If there are any seams, they shall be stitchless.

3.1 *Bounce* — The ball shall have a bounce of not less than 135 cm and not more than 147 cm when dropped from a height of 254 cm upon a 1 : 3 : 6 concrete base of 76 mm thickness.

Note — The measurements shall be taken from the concrete base to the bottom of the ball.

3.2 *Deformation* — The ball shall have a forward deformation of more than 5·6 mm and less than 7·4 mm and a return deformation of more than 8·9 mm and less than 10·8 mm at 8·165 kg load. The two deformation figures shall be the averages of three individual readings along three axes of the ball and no two individual readings shall differ by more than 0·8 mm in each cases.

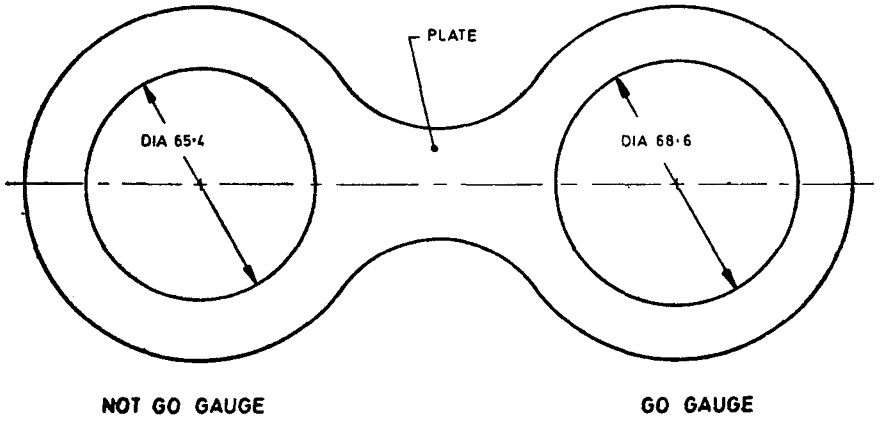
4. Tests

4.1 *Atmospheric Conditions for Testing* — Unless otherwise specified, all tests shall be carried out at a temperature of 27 ± 2°C and relative humidity of 65 ± 5 percent. All balls shall be removed from their container and kept at the said temperature and humidity for 24 hours prior to testing and shall be at that temperature and humidity when the test is commenced.

4.2 *Pre-compression Test* — Before any ball is tested, it shall be steadily compressed by approximately 25·4 mm on each of three diameters at right angles to one another in succession. This process shall be carried out three times (nine compressions in all). All tests shall be completed within two hours of pre-compression.

4.3 *Wear Resistance* — The balls shall be tumbled in a large drum, the inside of which is covered with coarse abrasive paper (Grit 50, silicon carbide) to about two-fifths of the interior surface. The tumbling shall be done at about 24 revolutions per minute for six hours. The weight of ball as also the bounce before and after tumbling shall be measured. The loss in mass as a result of the wear shall not exceed half percent of the original mass of the ball. The increase in bounce shall not exceed more than half the permissible variation for the ball before test.

4.4 *Testing Diameter* — The ring gauge used (*see* Fig. 1) shall consist of a metal plate preferably non corrosive, of a uniform thickness of 3·2 mm in which there are two circular openings 65·4 and 68·6 mm in diameter respectively. The inner surfaces of the gauge shall have a convex profile with a radius of 1·6 mm. The ball shall not drop through the smaller opening (not go gauge) by its own weight and shall drop through the larger opening (go gauge) by its own weight.



All dimensions in millimetres.

FIG. 1 GAUGE FOR TESTING DIAMETER

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4.5 *Deformation* — The balls when tested for deformation in accordance with the procedure given in Appendix A shall satisfy the requirements given in **3.2**.

5. Marking — The balls shall be marked with the manufacturer's name or his registered trade-mark and, on their inner side, they shall be marked with the manufacturer's code mark indicating the date of manufacture. The containers shall also be marked with the quarter and year of manufacture of the balls.

5.1 *ISI Certification Marking* — Details available with the Indian Standards Institution.

6. Sampling — Suitable number of samples, subject to agreement between the purchaser and the supplier, shall be selected for carrying out the tests.

7. Packing — The balls shall be packed in a weather-proof manner, such as in sealed polyethylene bags or air-tight tin containers.

APPENDIX A

(*Clause* 4.5)

DEFORMATION TEST

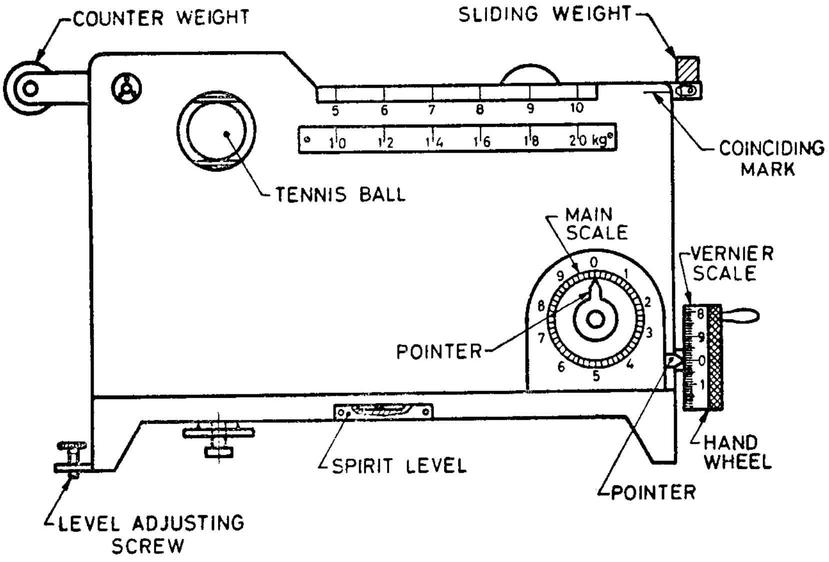
A-1. Description of the Machine

A-1.1 The testing unit (*see* Fig. 2) consists of two resting platens, upper and lower, in between which the ball is kept for testing. There is a beam which carries the counter weight, sliding weight and the upper platen. There are a number of slits on the beam for keeping the test weight. Lower platen may be raised or lowered by rotating the hand wheel placed on the right hand bottom of the machine. The hand wheel is connected to the lower platen through worm and worm wheel, and bevel gears. There are two scales on the machine, one on the front face and the second, a vernier, on the hand wheel. The front scale is capable of reading up to a millimetre and the vernier scale is capable of reading up to 0·1 or 0·01 millimetre.

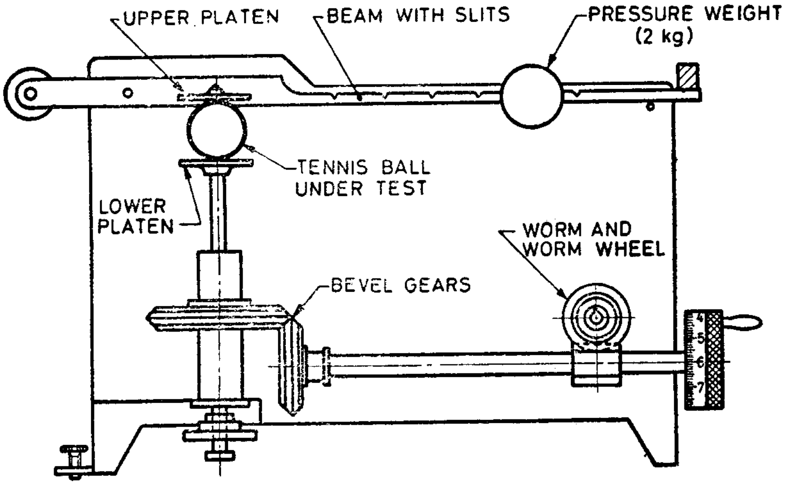
A-2. Procedure — The ball is placed in position so that the platen of the testing machine does not come in contact with the cover seam. The contact weight is applied, the pointer and the mark brought in level and the dial set to zero. The test weight equivalent to 8·165 kg is placed on the beam and pressure applied by turning the wheel at a uniform speed so that five seconds elapse from the instant the beam leaves its seat until the pointer is brought in level with the mark. When turning ceases the reading is recorded (forward deformation). The wheel is turned again until it reaches 10 on the scale (25·4 mm deformation). The wheel is then rotated in the opposite direction at a uniform speed (thus releasing pressure) until a beam pointer again coincides with the mark. After waiting ten seconds the pointer is adjusted to the mark, if necessary. The reading is then recorded (return deformation). This procedure is repeated on each ball across the two diameters at right angles to the initial position and to each other.

EXPLANATORY NOTE

On the suggestion of Consultative Committee of Parliament for Department of Sports, the concerned expert Panel of Sports Goods Sectional Committee has modified this standard and brought in line with the requirements covered in respective hand-book of Tennis Ball's Federation.



FRONT VIEW



FRONT VIEW WITH COVER PLATE REMOVED

FIG. 2 TENNIS BALL TESTING MACHINE